ADL110

Installation Manual

Version 0.94

12.02.2013

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1 Version History

Version 0.9 published 10.12.2012
Version 0.91 published 21.01.2013
Version 0.92 published 02.02.2013
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2 Page Index

This manual contains numbered pages 1 to 15.

3 General Description

The ADL110 is a flight data link device. It allows downloading weather data while in flight. Besides it features in flight SMS communication. The data link works through the Iridium satellite network with global coverage.

4 Certification ADL110

The ADL110 can be installed in certified aircraft if a suitable minor change is used. The device itself does not come with any certification. Please consult the minor change documentation for details.

5 Disclaimer

The ADL110 is provided as a non certified component. The only basis on witch it can be installed is an appropriate minor change. It is the sole responsibility of the user and installer that is installed and used in a legal way. The device may stop working at any time. Do not undertake flights you would not undertake without the ADL110.

6 Warning!

While we do everything we can to ensure quality the ADL110 devices might not work at any time. In addition they may display false information. **Never penetrate weather based on the information provided by the ADL110**. This information is for situational awareness only. The device features a GPS moving map system. This system is designed to display the aircraft position in relation to the weather data. It is not designed as a means of primary navigation. Especially the build in database is not updated in a regular aviation cycle. It is also not maintained to the standards of certified aviation databases.

7 Emergency procedures

If you suspect any malfunction of the ADL110 or interference with other aircraft systems, deactivate the device by pulling / deactivating the aircraft circuit breaker for the device. Do not reactivate the device until the problem has been investigated and resolved on the ground.

In case of a generator failure or similar situation requiring electric load shedding, deactivate the ADL110 by pulling / deactivating the aircraft circuit breaker for the device.

8 Dimensions

Figures 1 and 2 show the outside dimensions of the ADL110 enclosure excluding the rear connectors. Please refer to the section “Panel cutout” for depth requirements. Figures 3 and 4 show pictures of the enclosure.

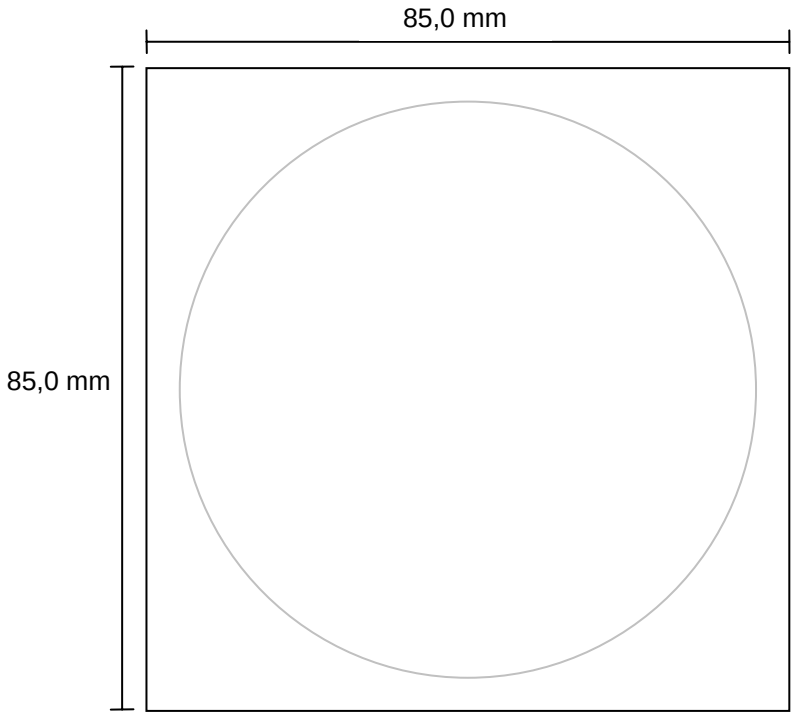

Figure 1 - Front dimensions of housing

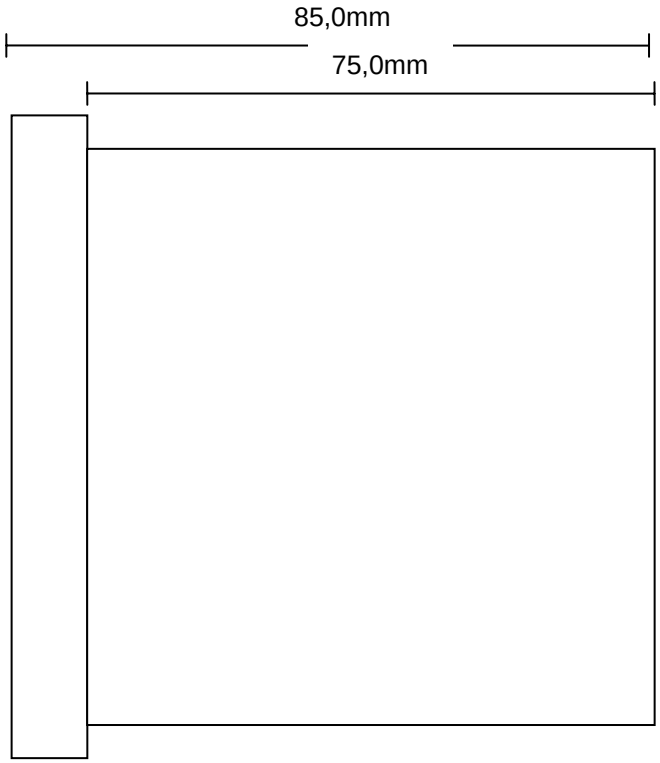

Figure 2 - Side dimensions of housing

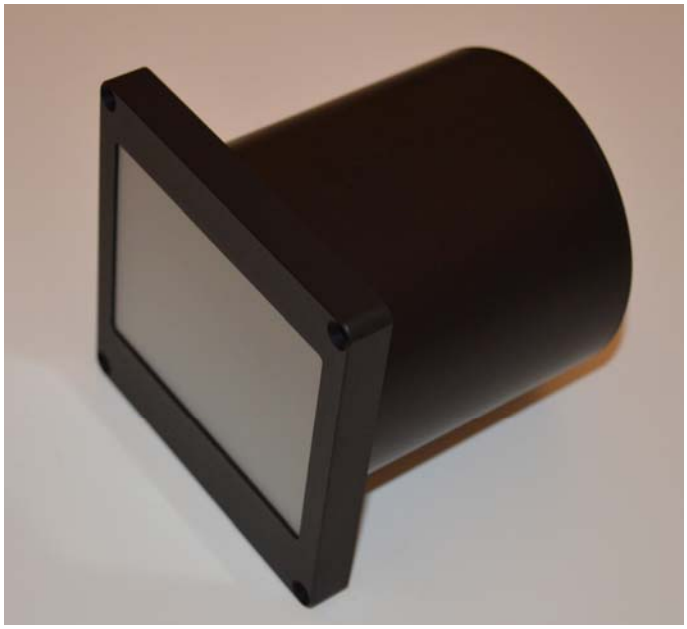

Figure 3 – Enclosure front view

Figure 4 – Enclosure rear view

9 Installation

9.1 Inspection

Inspect the ADL110 and all supplied parts for condition and completeness. Verify on our website that you have the most up to date version of this installation manual.

9.2 Iridium Antenna

The device uses an Iridium antenna to communicate with the Iridium satellite network. This antenna is also used by the build-in GPS receiver. If an outside mounted Iridium antenna is available, this will represent the best solution. If such an antenna is not available we recommend using an antenna mounted on the instrument glareshield. This will provide good reception at a much lower cost than an outside antenna installation.
The antenna will be connected to the device using a BNC female connector. If your antenna does not come with such a connecter it must be crimped on the cable.

9.2.1 Glareshield antenna installation

In the case of a glareshield installation we recommend the **Iridium SYN7391-C** antenna. This antenna has been tested with good results and the antenna does not incorporate any magnetic mount which could deviate the magnetic compass. In general you should try to place the antenna as far forward as possible in order to give it the best panoramic opening to the sky possible.
Figure 5 shows such a glareshield installation of the SYN7391-C antenna.

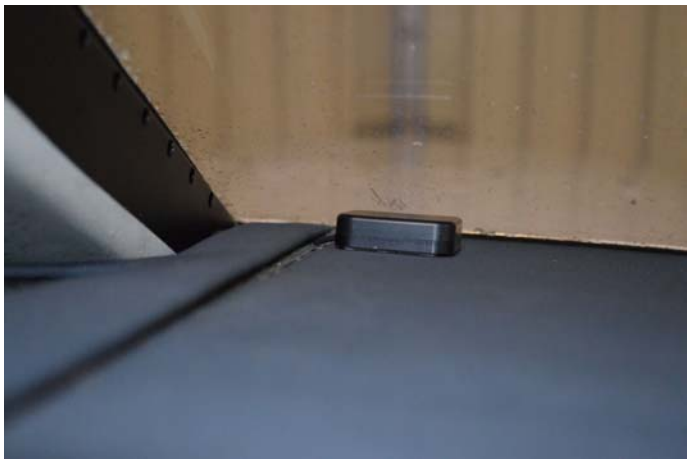

Figure 5 – Iridium SYN7391-C antenna on glareshield

9.2.2 External antenna installation

We recommend the use of the S67-1575-109 antenna manufactured by Sensor Systems Inc. Before attempting the installation of any outside antenna and drilling any holes in the hull, please make sure you have the required documentation and certification. For any certified aircraft a minor or even a major change will be required.
Please note that the ADL110 does not provide any lightning protection. When using an external antenna, the antenna must be grounded and provide full certified lightning protection.

9.2.3 Antenna testing

Please note that the Iridium network requires a better view to the sky than the GPS receiver. Therefore make sure the antenna is placed properly and when testing do not place the aircraft next to a big hangar or similar objects obstructing the sky.

9.3 Panel cutout

diameter of the enclosure is 3 Inch (76,2mm). Therefore a minimum cutout diameter of 78mm is required. The device itself has got a depth of 76 mm behind the panel front plate. In order to allow a proper installation of connectors an installation space with a minimum depth of 130 mm behind the panel front should be selected. If this is not possible small connectors can be used. If you plan such an installation please contact us.

9.3.1 Direct Mount

In this case the device is attached to the panel using four M3 screws. Figure 6 shows the required cutout. We recommend using our aluminum ring part number RNG043 in order to provide threads for these screws. Figure 7 depicts the RNG043 adapter.

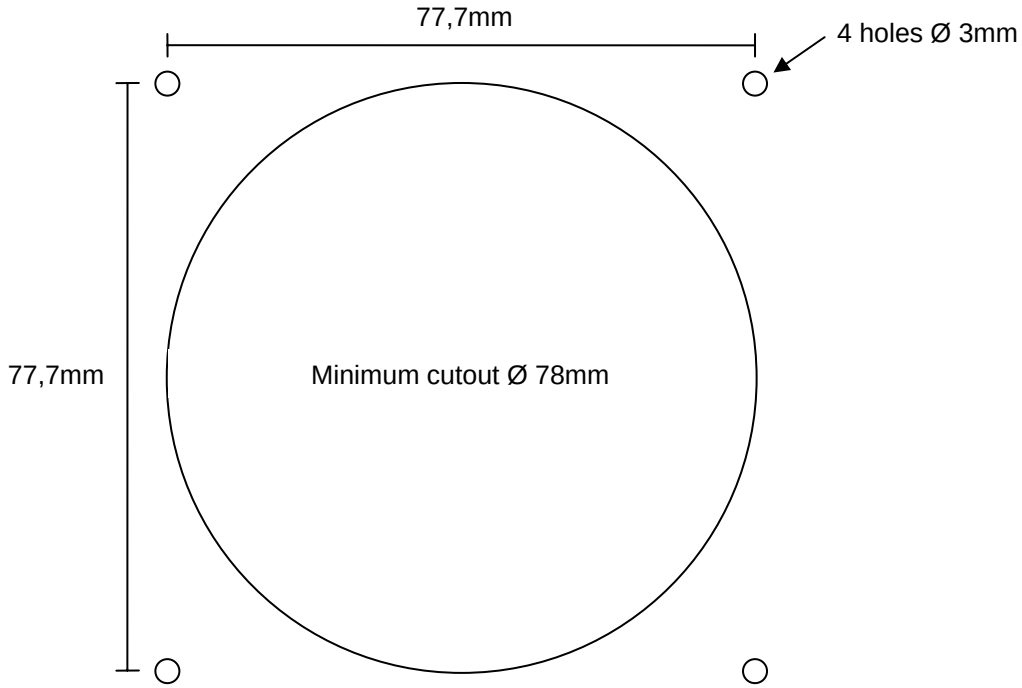

Figure 6 – Panel cutout for direct mount

Figure 7 – The rear ring providing M3 threads for direct mount partnumber RNG043

9.4 Adapter mount

As an alternative to the direct mount option the device can also be mounted using our ADP035 adapter. This way a more common 3 ½ inch dilling scheme can be used. The required panel cutout is depicted as figure 8.

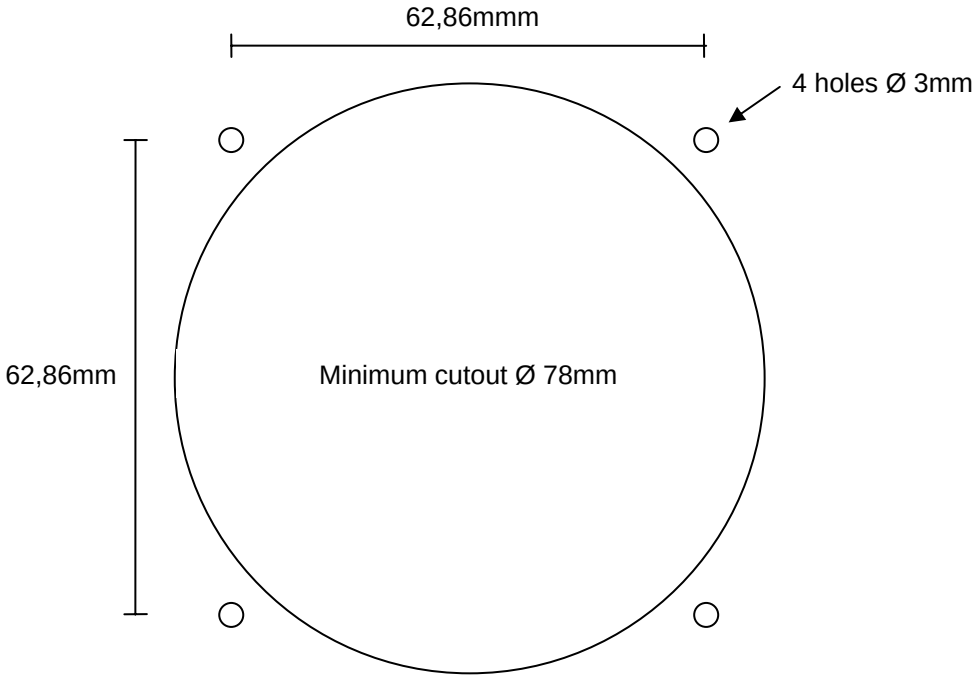

Figure 8 – Standard 3 1/8” panel cutout for mount with adapter

The adapter ADP035 consists of two parts. The square adapter plate is mounted on the front side of the panel and the round ring provides the threads to secure it to the panel using 4 flat heat M3 screws. Figure 9 shows the ADP035 adapter.
Finally with the adapter installed the device can be pushed from the front into the adapter and secure with four flat head M3x10mm screws. Pay attention not to damage the threads in the adapter.

Figure 9 - ADP035 adapter allowing the installation in a standard 3 1/8” panel cutout

9.5 Wiring

9.5.1 Voltage connector

The device must be connected to the electrical power distribution system of the aircraft. The connector on the device backside is a MIL-C 5015 10SL3S (figure 10). An appropriate matching connector on the aircraft side is MIL-C 5015 10SL3 using an appropriate strain relief (figure 11).

The connector is allocated as follows:

Pin A: Vcc (10V - 30V) DC
Pin B: Gnd
Pin C: Unused

The device will accept DC 7V to 30V. We recommend installing a 1A circuit breaker in line with the ADL110. For additional protection the device has got an internal fuse rated at 2A. The maximum power consumption will be 6W.

Figure 10 - MIL-C 5015 10SL3S connector of the device

Figure 11 - MIL-C 5015 10SL3 and strain relief

9.5.2 Antenna connector

The device features a rear BNC male connector. Connect the antenna by twisting the BNC female connector of the antenna onto the device connector.

9.5.3 Aviation data interface

The 15 pin male D-SUB connector on the backside of the enclosure provides the optional possibility to interconnect the ADL110 with a FMS/GPS navigator transmitting the current route/flightplan information via RS232 to the device. **This communication is one way only**. The ADL110 will only act as a receiver. The supported data format is the “Aviation” data format. The device has been tested with the Garmin 530/430 series devices. If you wish to connect other flightplan sources please contact us.

Please not the Aviation In feature when connected must be activated in the software on the “FPL” page using the right side button “FPL IN”.

ADL110 15pin D-SUB pin	Function
1	GND
2	RS232 OUT
3	RS232 IN - Aviation data input
4	Manufacturer use, do not connect
5	Manufacturer use, do not connect
6	Manufacturer use, do not connect
7	Update Pin
8	Manufacturer use, do not connect
9	Manufacturer use, do not connect
10	Manufacturer use, do not connect
11	Manufacturer use, do not connect
12	Manufacturer use, do not connect
13	Manufacturer use, do not connect
14	Manufacturer use, do not connect
15	Manufacturer use, do not connect

Table 1 - 15pin D-SUB pin description

Please consult the installation manual of your FMS/GPS for the required pin configuration. Please not that usually the Garmin 430/530 devices will only be able to supply aviation out data on one RS232 port at a time. Therefore if you have multiple devices requiring the aviation data you will probably have to physically connect them to the same pin.

9.5.4 Firmware Update interface

The internal firmware can be updated by the user or installer. For the detailed procedure please refer to the current user manual. While this update can be done with the ADL110 outside the aircraft we recommend the installation of an additional 15 pin D-SUB connector for updates. We provide a pre wired setup which corresponds to figure 12.
Please not that the ADL110 update plug must be installed when the device is running. As figure 12 shows if not installed aviation data input will not work.

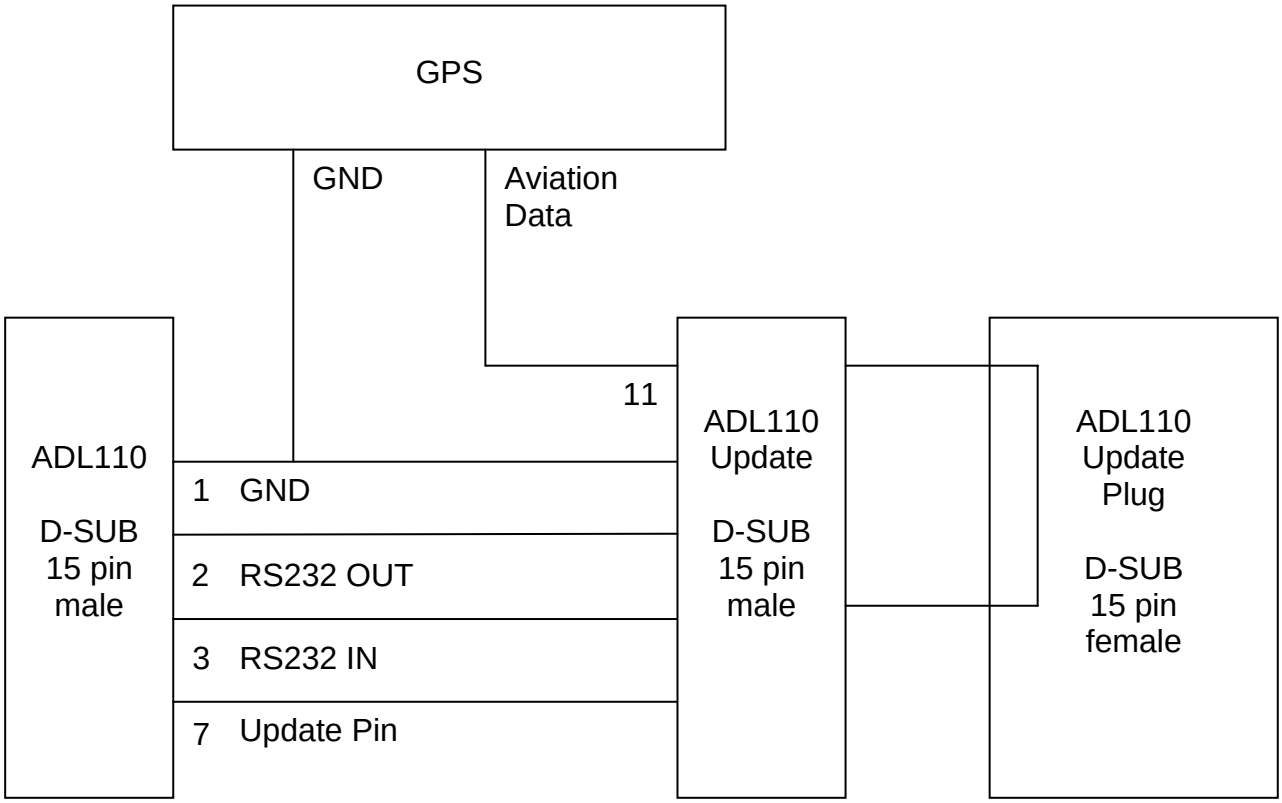

Figure 12 – Interconnect – ADL110 – ADL110 Update Port - GPS

Reminder: Only connect the pins described above. Connecting additional pins may damage the equipment.

10 Cooling

Generally the ADL110 does not require any means of active cooling. If mounted in a position where the specified temperature limit might by exceeded, additional air should be implemented.

11 Post installation checkout

Disconnect the power connector. Turn on the aircraft electrical system and measure the voltage at the connector is within specification. Turn the aircraft power system off and reinstall power connector.

Verify the wiring is secure and has no interference with any other electrical or mechanical system. Especially make sure the wiring is free of any flight control systems.

Turn the aircraft electrical system on and verify the ADL110 is running. Place the aircraft in a position with good panoramic view to the sky. Verify the device has got Iridium and GPS reception using the blue signal bars on the right top side of the screen. The left bars indicate iridium signal quality and the right bar indicates GPS signal quality. If the GPS has not been running recently it may require several minutes to get a fix. The Iridium system will usually get a satellite fix much faster.

In order to start an Iridium transmission the software will require a minimum of two Iridium signal quality bars as experience has shown that below this level, transmissions may become unreliable. Do a test run and download a METAR for an airport (for example EDDB).

Please note: A test transmission will only be possible if at the time of installation the Iridium data contract for the device has already been activated.

Verify the rest of the avionics system in order to assure that no other systems have malfunctions after the installation.

12 Documentation

Produce detailed installation documentation. Join this documentation including this manual to the aircraft records.

Join the current ADL110 user manual to the pilots operation manual.

13 Continued maintenance

No regular maintenance is required.

14 Software and database updates

Please contact us for information on software and database updates.

15 Troubleshooting

Verify all connectors and proper power supply. Inspect the device for visible damage. The device does not contain any field serviceable parts. It the device is believed to be defunct please contact us for repair.

16 Specifications ADL110

Voltage:	7 to 30V
Circuit breaker:	1A
Internal fuse:	2A
Maximum consumption:	6W
Temperature range operation:	-20 to 70°C
Temperature range storage:	-30 to 70°C
Weight excl. installation material:	480g

17 Part number reference

Partnumber	Description
ADL110	Weather display
RNG043	Mounting adapter
ADP035	Mounting adapter

18 Contact

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